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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/744,663	03/23/2001	Robert Z. Stodilka	SIM0075	4259

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EXAMINER

LEE, SHUN K

ART UNIT PAPER NUMBER

2878

DATE MAILED: 08/14/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/744,663	STODILKA ET AL.	
	Examiner	Art Unit	
	Shun Lee	2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 14, 18, 27 and 28 is/are rejected.
- 7) ☒ Claim(s) 2-13, 15-17, 19-26 and 29 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s): _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>6</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

National Stage Application

1. The Examiner acknowledges consideration of the International Preliminary Examination Report in International Application PCT/CA99/00751. MPEP § 1893.03(e).

Priority

2. Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 119(e) as follows:

An application in which the benefits of an earlier application are desired must contain a specific reference to the prior application(s) in the first sentence of the specification or in an application data sheet (37 CFR 1.78(a)(2) and (a)(5)).

Information Disclosure Statement

3. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Specification

4. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). Thus the abstract from W/O 00/10034 (International Application PCT/CA99/00751) has been used.

5. The disclosure is objected to because of the following informalities: no page number on first page (see PCT Rule 11.7 and 37 CFR 1.52(b)(5)). Appropriate correction is required.

6. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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9. Claims 1, 14, 18, 27, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chan *et al.* (US 5,376,796) in view of Hasegawa *et al.* (US 5,376,795).

In regard to claim 1, Chan *et al.* disclose (column 18, line 60 to column 19, line 48) a method of applying correction to emission tomography images of a region of interest of a subject under observation comprising the steps of:

- (a) aligning a three-dimensional computer model (*i.e.*, three dimensional body contour database) representing the density distribution (*i.e.*, density distribution with attenuation constant μ) within said region of interest with said emission tomography images (*i.e.*, reconstructed radiation source locations); and
- (b) applying attenuation correction (column 19, lines 32-48) to said emission tomography images using said aligned computer model as a guide.

The method of Chan *et al.* lacks applying scatter correction. Hasegawa *et al.* teach (column 6, lines 8-22) that in addition to attenuation correction, other physical perturbations such as scattering can also be corrected. Therefore it would have been obvious to one having ordinary skill in the art to apply scatter correction in the method of Chan *et al.*, in order to correct for additional physical perturbations.

In regard to claim 14, Chan *et al.* disclose (column 18, line 60 to column 19, line 48) that in an emission tomography imaging system where emission tomography images of a region of interest of a subject are taken for analysis and are corrected for attenuation, the improvement comprising using a three-dimensional computer model approximating the density distribution within the region of interest as a guide to the

application of attenuation correction. The system of Chan *et al.* lacks applying scatter correction. Hasegawa *et al.* teach (column 6, lines 8-22) that in addition to attenuation correction, other physical perturbations such as scattering can also be corrected. Therefore it would have been obvious to one having ordinary skill in the art to apply scatter correction in the system of Chan *et al.*, in order to correct for additional physical perturbations.

In regard to claim **18**, Chan *et al.* disclose (column 18, line 60 to column 19, line 48; Fig. 3) an emission tomography image processing system comprising:

- (a) memory (210) storing emission tomography images of a region of interest of a subject;
- (b) said memory (210) also storing at least one three-dimensional computer model of said region of interest, said computer model representing the density distribution within said region of interest; and
- (c) a processor (210) for registering said computer model with said emission tomography images and for applying attenuation correction to said emission tomography images using said registered computer model as a guide.

The system of Chan *et al.* lacks applying scatter correction. Hasegawa *et al.* teach (column 6, lines 8-22) that in addition to attenuation correction, other physical perturbations such as scattering can also be corrected. Therefore it would have been obvious to one having ordinary skill in the art to apply scatter correction in the system of Chan *et al.*, in order to correct for additional physical perturbations.

In regard to claim **27**, Chan *et al.* disclose (column 18, line 60 to column 19, line 48; Fig. 3) an emission tomography imaging system comprising:

- (a) means (200) for taking emission tomography images of a region of interest of a subject (59) to form a three-dimensional image of said region of interest;
- (b) memory (210) to store said emission tomography images, said memory also storing at least one three-dimensional computer model of said region of interest, said computer model representing the density distribution within said region of interest; and
- (c) a processor (210) for aligning said computer model with said emission tomography images and for applying attenuation correction to said emission tomography images using said aligned computer model as a guide.

The system of Chan *et al.* lacks applying scatter correction. Hasegawa *et al.* teach (column 6, lines 8-22) that in addition to attenuation correction, other physical perturbations such as scattering can also be corrected. Therefore it would have been obvious to one having ordinary skill in the art to apply scatter correction in the system of Chan *et al.*, in order to correct for additional physical perturbations.

In regard to claim **28**, Chan *et al.* disclose (column 18, line 60 to column 19, line 48; Figs. 3 and 6) a computer readable medium including computer program code for applying scatter and attenuation correction to emission tomography images of a region of interest of a subject, said computer readable medium including:

- (a) computer program code (360, 365, 370, 380) for aligning a three-dimensional computer model representing the density distribution within said region of interest with said emission tomography images; and
- (b) computer program code (360, 365, 370, 380) for applying attenuation corrections to said emission tomography images using said aligned computer model as a guide.

The computer readable medium of Chan *et al.* lacks applying scatter correction.

Hasegawa *et al.* teach (column 6, lines 8-22) that in addition to attenuation correction, other physical perturbations such as scattering can also be corrected. Therefore it would have been obvious to one having ordinary skill in the art to apply scatter correction in the computer readable medium of Chan *et al.*, in order to correct for additional physical perturbations.

Allowable Subject Matter

10. Claims 2-13, 15-17, 19-26, and 29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter: the instant application is deemed to be directed to a nonobvious improvement over the invention patented in US Patent 5,376,796. The improvement comprises in combination with other recited elements, that (a) the computer model is in the form of a two-component atlas (see third paragraph on pg. 6 of the specification and 54 in Fig. 2) as recited in claims 2-13, 15-17, and 19-26; and (b) aligning (56 in Fig. 2) a functional

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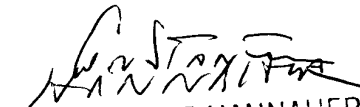
component of the computer model simulating a SPECT or PET scan of the region of interest and for generating a set of spatial transformation parameters and aligning (58 in Fig. 2) an anatomical component of said computer model simulating a transmission scan of the region of interest using the set of spatial transformation parameters as recited in claim 29.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shun Lee whose telephone number is (703) 308-4860. The examiner can normally be reached on Tuesday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on (703) 308-4881. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.


CONSTANTINE HANNAHER
PRIMARY EXAMINER
GROUP ART UNIT 2878

SL
August 1, 2002